Manish Shrivastav
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SUMMARY

Innovative Software Engineer with expertise in embedded systems, TinyML, and machine learning. Skilled in developing resource-efficient algorithms for edge computing, with hands-on experience in **C++** and optimizing machine learning models for **embedded systems**. Adept at translating academic knowledge into practical solutions for **computer vision** and **IoT** challenges. Passionate about solving real-world problems in constrained environments, focusing on performance, efficiency, and scalability.

EXPERIENCE

Software Engineer
Corteva Agriscience · Johnston, IA
Dec. 2022 – Mar 2024

- Developed and maintained scalable web applications and backend systems, enhancing functionality and user experience.
- Implemented RESTful APIs, facilitating seamless communication between application components.
- Integrated Azure DevOps methodologies, streamlining CI/CD pipelines to enhance software delivery efficiency.
- Collaborated closely with cross-functional teams to design and implement innovative features, ensuring alignment with business objectives and client requirements.

QA Engineer
Corteva Agriscience · Johnston, IA

- Engineered automated testing processes to enhance software quality and reliability.
- Collaborated with developers to troubleshoot and debug complex systems, improving stability and performance.
- Applied advanced analytical techniques to optimize data workflows.

Machine Learning Engineer
Benekiva · Des Moines, IA
Jan. 2021 - Feb. 2022

- Built an entity extraction model for an insurance company to classify causes of death, accelerating the compensation process and improving workflow efficiency by 30%.
- Designed and optimized algorithms for data transformation, ensuring model integrity and performance.
- Partnered with product teams to translate business requirements into machine learning solutions.

EDUCATION

Ph.D. in Agricultural Engineering, Minor in Statistics
Iowa State University · Ames, IA
2016 - 2022
Master's in Agricultural Engineering
Iowa State University · Ames, IA
2013 - 2016

TECHNICAL SKILLS

Programming: Python, C++, C#, .NET Core, SQL
Embedded Systems: TensorFlow Lite for Microcontrollers, TinyML, Arduino
Software Development: Algorithm Design, Debugging, CI/CD, Agile Development
Data Science & Machine Learning: Data Preprocessing, Feature Engineering, Model Development
Computer Vision: OpenCV, YOLO, TensorFlow
Tools & Platforms: Jupyter, Git, Docker
Data Visualization: Power BI, Tableau, DAX

CERTIFICATIONS

Tiny Machine Learning, Nov 2024
Introduction to TensorFlow for AI, ML, and Deep Learning · May 2023
Mathematics for Machine Learning and Data Science · Sept. 2023
Introduction to Data Engineering · Sept. 2023
Machine Learning Specialization · Oct. 2022

KEY PROJECTS

TinyML Projects

- **Keyword Spotting on Microcontrollers:**
  Developed a speech recognition model using TensorFlow Lite for microcontrollers, deployed on Arduino Nano BLE Sense. Optimized the model with quantization for low memory usage and tested it in noisy environments, ensuring robustness.
- **Person Detection on Edge Devices:**
  Implemented a computer vision model using YOLO and TensorFlow Lite for human presence detection. Deployed the model on Arduino Nano BLE Sense, optimizing it for memory-constrained embedded systems.
- **Gesture Recognition System:**
  Designed a system to classify hand gestures using accelerometer data, leveraging TinyML techniques. Trained and deployed the model on Arduino Nano BLE Sense, achieving efficient inference in real-time.
- **Anomaly Detection for IoT Sensors:**
  Built an anomaly detection system for monitoring irregular patterns in sensor data, deployed lightweight models on edge devices for predictive maintenance applications.
- **Transfer Learning for Image Classification:**
  Applied transfer learning techniques to adapt a pre-trained MobileNet model for low-power image classification tasks. Optimized the model using TensorFlow Lite for deployment on embedded hardware with minimal computational overhead.
- **Embedded ML Model Optimization:**
  Explored quantization and pruning techniques to deploy compact ML models on microcontrollers with limited resources. Benchmarked performance and accuracy trade-offs across devices like Arduino Nano and ESP32.

ADDITIONAL INFORMATION

- Passionate about combining machine learning with embedded systems to solve real-world problems in constrained environments.
- Committed to continuous learning and applying cutting-edge technologies to enhance product performance and user experience.